

EOS, Transactions, American Geophysical Union

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Planetology

C. Cravens, S. L. Crawford, A. F. Ragy, and I. Genboni (Spare Thymire Remedich Labareter: arreage of Alcospharie and Oceanic Science, University of Michigan, Ann Arbor, Michigan 09)

the University of Michigan, Ann Arbor, Nichigan AB109;
A substantial nightside lonosphero has been observed on Young during oper orbits of the Ploeser Young Orbiter. However, as some orbits during which the saler wind dynamic pressure was large, the nightside Conosphere seems to have slonest disappeared, on sixing only on irregular patches of low desaity plasma. We letargrat these observational troutt caling a two-disamsional theoretical model of the lanosphere of Young to which sepirical horizonal valentials are adopted. We show that the destas to which her irrontal crassport of lone from day to might an onlytale in singhtside Conosphere depends of the lanosphere in the independent plantiles, and if the independent height et the terrinator. We simulation to supporting a nightside longsphere. Our model also provides indirect middene lor as sehemed descript to hydrogen ratio on Yenos. To on Venue. Geophys. Ros., Alue, Paper 1804b2

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Vol. 64, No. 16, Pages 145-152

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field as previously proposed. The results of the
date enalysis iedicate that a source in a placetory
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Geophys. Res. Latt., Paper 110332 Geophys. Res. Latt., Paper 310332

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Hawke.

The distribution of the over the Mars lebrium end contharm Genesus Procefisrum portions of the Apollo 15 Lanar ground track hee been hedsled by deconvolving saveral fields of orbital games ray spectroscopy data. Including a prior study of the Apoelmum region, a continuous swah from 10% to be to the contrast quadtest has now been enclysed. In the Aristarchum region, the center doublings has the Th distribution at the concentration of 20 ppm. Other acheed manual region, the center doublings has the Th distribution at a sense on the Aristarchum Fields as not onlive. The average The concentration cores the Aristarchum Fields is not onlive. The average The concentration cores the Aristarchum Fields is not onlive. The average The concentration strong the aristarchum Fields are found to mare regions around Brayley, and at the objects bleskets of Timochecia and Lawbert. The in the Testonthenian mare teglose is generally low alth one acutable exception lying roughly between the craters Rulet and Carifor. The existence of submanced th concentrations in nare benalt regions naggests that reservoirs of some late stags mare besits incorporated EREST-tich astacled daring formation of transit. Insules seasing, games ray spectroscopy!

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Seismology

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The corrusponeding values of K are figitable as X aruptions (chromological order), respectively. The corresponding values of 2 acc extrained to be 0.70 ~ 2.6 s 10<sup>2</sup>], 0.70 ~ 2.6 s 10<sup>2</sup>], 1.9 ~ 5.5 ° 0.70 ~ 2.b = 10<sup>23</sup>, 0.70 ~ 2.6 = 10<sup>40</sup>, 1.9 \*s.3 · 10<sup>19</sup>, and 1.4 ~ 5.1 x 10<sup>19</sup> ergs solm values of ejecte volocity renging from 100 to 375 s/s. The ratios of K ro the amplitude of the air ware solited by the cruption to 20 to 40 times input for the mein swent on Hoy 16 than for the sibety avects suggesting a significant difference in the avects suggesting a significant difference that a digital sectemograph in the vicinity of volcanity provides a significant supplies of the maplosive power of a volcanic scuption (MK. S. and pulse, quentification of volcanit caption, captured to the volcanity of volcanity (Solan), tamb pulse, quentification of volcanity (Solan), Res. Latt. Pages 100152

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Yews

### <sup>3</sup>He/<sup>4</sup>He Values in **Natural Diamonds**

Values of the 3He/4He ratio in natural diamond crystals appear to be higher than the so-called printerillal ratios observed in meteorites, according to a recent report by Minou Ozima and Shigeo Zashu of the Georghys ical Institute at the University of Tokyo (Science, March 4, 1983). The calues obtained from helium fractions of 13 diamonds ranged from less than  $10^{-7}$  to  $3.2 \pm 0.25 \times 10^{-4}$ , indicating a rather large curichment of primitive helium. The measured ratios are close to those for solar-type helium.

The significance of those determinations could be two-fold, raising questions about the interpretation of helium isotope ratios from other surface samples and from other terrestrial sources. A possibility is that the diamonds may have originated in a deep, chemically isolated, and decoupled part of the earth's mantle. The problem is that this decoupling would have to be total, implying essentially no communication of the deep mantle with the rest of the earth. Ozima and Zashu prefer to think that the diamonds themselves preserved the helium ratio of a rery primitive environment by being unusually depleted in uranium and thorium. This latter explanation, if correct, would mean that in at least one case, i.e., these iliamonds, one cannot determine the geological evolution of

The study used 13 individual, industrialgrade diamond crystals of 1-2 carats each. A terious problem with the interpretation of the beliam isotope ratios measured on the crystals could be that their origin is maknown. The diamonds are thought to have come from more than one South African mine, no specific location having been specified.

Two of the diamonds' ratios are 2 to 3 times higher than the accepted prinordial value of meteorites ("He" He =  $(142 \pm 2)$ ) 10<sup>-2</sup> according to J. H. Reynolds, V. Frick, J.M. Neil, and D. L. Phinney, Grachine, Cosmo chim. Acta, 42, 1775, 1978), and on the order of ratios for solar-type helium. There was a wide range of values among the set of 13 stones. Ozima and Zashu postulate that the natios are indigenous to their origins in the onantle. That the wide cariation could be due to products of a nuclear reaction seems the likely. The diamonds could have been in residence to the crust in diamond pipes for over I billion years, long enough to have taken a high dosage from the thermal neutron flux. But the reaction to produce The is the follow-

<sup>5</sup>Li  $(a,\alpha)$  <sup>3</sup>H  $\rightarrow$  <sup>3</sup>He About four orders of magnitude more lithirum (Li) than is thought to exist in crustal rocks would have been required, however, to produce the observed concentrations of 31 le. The other way to affect the helium ratio is to add radiogenic <sup>4</sup>He, and this is the process

proposed to explain the results. The 411c could have been enriched in the source mantel regims or could lrave been added, perhaps to the diamonds themselves. The explanation of Ozima and Zashn is as follows: 'Dlamonds with higher 311c/He values (710-6) may represent very primitive helinar that

ISBN 0-87590-206-5 Climatic Changes

M.I. Budyko English Trans., R. Zolina English Trans., editor, L. Levin (1977)

The application of physical climatology in studying climatic changes is the main problem presented in this

Budyko also deals with the effect of climatic changes on biological processes including the evolution of iving organisms. He presents the need to develop methods, and offers

modifications. 262 pages Extensive Bibliography List \$24.

suggestions, for controlling climate

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### evolved little since the formation of the earth. **AGU Awards** Announced and thornun contents are generally extremel

Preservation of such primitive helium

throughout a geological age would be possi-

ble only in an environment where uranium

suon after the earth was formed. In the case

'aged' helium deen in the upper mantle.

Another observation related to the 'He

contents of the lower ratio cliamonds is used

as basis for extending the young-old hypothe-

sis even further. Diamonds with lower ratios

have significantly lower absolute contents of

Ite. Could it be that the smaller amounts of

Ozima and Zashii note that the solar-type

cretionary stages that produced parem bodies

formed the primordial earth may have been

Monsoon Research

Forecasting monsoons is one of four re-

search areas proposed as part of an expand

ed program of collaborative projects by U.S.

and Indian scientists and engineers, accord-

ing to George A. Keyworth, H. science advi-

sor to President Reagan and dicector of the

(OSTP). The other proposed research areas

During the next 6 months, scientists will

score out research projects' and detail specif-

the National Science Foundation's (NSF) Di-

rectorate for Scientilic, Technological, and

International Affairs. Most of the actual re-

Research on the long-term cariability of

mouseons and short-term predictability will

be the focuses of the monsoon forecasting ef-

fort. India and the United States have agreed

to 10 general tasks as part of this program,

accurrling to Paul Stephens, associate pro-

gram director for the Global Atmospheric

Research Program within NSF's Dicision of

Atmospheric Sciences. Six of these tasks ap-

develop long-term data records,

muspheric and oceanic circulations,

ply to the long-term variability portion of the

· prepare and compile data records from

corduct theoretical and statistical studies

to understand morrisoons and the global at-

investigate occan-atmosphere interac-

studies and modeling experiments to take

times as they affect monsoons and plan field

place thiring the first year of the agreement,

tion models to explore long-term predictabili-

• obtain ice cores in glaciers to provide proxy data for studies of interannual variabil-

. Shukla of the National Aeronautics and

Space Administration's Goddard Laboratory

for Atmospheric Science is the program lead-

The remaining four tasks upply to the short-term predictability portion of the bilat-

develop mathematical models suitable for numerical prediction of monsoons,

develop systems for acquisition and proc-

· develop techniques and provide equip-

ment for processing satellite data and for ar-

T. N. Krishnamurti of Florida State Universi-

ty is the program leader.

Monsoon forecasting and the three other

research fields were first explored last No-vember during a visit to India by senior U.S.

scientists; specific topics were agreed upon by a panel of scientists from both countries fol-

lowing a meeting this past January in India.
After the first phase of the program (which will last 18 to 24 months), another set of research projects could be identified for a continuation of the collaborative effort.

In the U.S., overall coordination of the blateral research will be provided through

NSF, while policy guidance will be provided by an interagency committee chaired by Keyworth. A scientific oversight committee at

the National Academy of Sciences will recommend participants and will review specific projects. The amount of money each country

will contribute has not yet been determined, according to OSTP and NSF BTR

• conduct basic research on monsoon

eral effort on monsoon forecasting:

essing of initial data,

chiving It, and

dynamics.

· conduct experiments with general circula-

search will begin with the advent of fiscal

are health, agriculture and biomass produc-

Office of Science and Technology Police

tion, and decentralized electrical power

ic research activities, according to Roger

SOURCES.

research effort:

other areas of the world,

irradiated by intense primitive solar wind. In

3He reflect a relatively outgassed mantle?

helium ratios could be due to a different

of meteorites. Accretionary particles that

this hypothesis, meteorites would have trapped only planetary helium.—PMB

mode of accretion of the earth than the ac-

small (<0.1 ppb). The idea proposed is that the high helium ratios are representative of a AGU has named the 1983 recipients of the perfect process that trapped primitive helium Bowie, Bucher, Ewing, Flenting, and Macelwane awards. These distinctive honors recognize AGU members who make significant of the lower belimm ratios, either a high unacontributions to geophysical knowledge. All nium and thorium environment is implied, or of the awards except the Bucher medal will else the diamonds are younger. Younger diabe presented at a ceremony on Wednesday monds would have trapped inore ecoleed or June I, at the AGU Spring Meeting in Balti-more, Md. This year the Bucher Medal will be presented at the AGU Fall Meeting.

AGU is adding to its roster of distinguished awards the Waldo E. Smith Award for extraordinary service to geophysics. The premier award will be made at the 1983 Spring Meeting to AGU Executive Director Emeritus

The William Bowie Medal is awarded to Syun-iti Akonoto for outstanding contribu-

John W. Hundin for original contributions to the basic knowledge of the earth's crust. The medal is awarded in odd-muthered years.

The Mourice Ewing medal is awarded to Fred Noel Spiess for significant original contributions to the undecstanding of physical, geophysical, and geological processes in the ocean; for significant, original contributions to scientific ocean engineering, technology, and instrumentation; and for ourstanding service to marine sciences. The medal is pre sented jointly by the U.S. Nave and ACU.

The John Adoms Fleming Medal is awarded to S. Keith Runcora for original research and reclinical leadership in geomagnetism, annospheric electricity, acronomy, and related sciences. The medal is awarded in old-muni-

The James B. Mnceheane Atourd is given in recognition of significant contributions to the geophysical sciences by a young scientist of than 36 years old. A maximum of three Doyon, head of the Africa and Asia section of cipients are Thomos H. Jordan, Douald J. De Poolo, and William L. Chameides.

The Robert E. Horron Medal for otusiand ing contributions to the geophysical aspects of hedrology is given in even-numbered years.

An application of ACC modal recipients was published in the most recent membership di rectory (Em., August 31, 1982, p. 664).--87R

### Geophysicists

Bruce B. Hauskaw, a specialist in geochemistry and groundwater hydrology, has been approjected assistant director for research at thre U.S. Geological Survey (USGS) National Center in Reston, Va. He succeeds Robert Wesson, wirn has returned to a research positime within rhe USGS. Haushaw will serve as the principal addisor to the USGS director on major research initiatives and program direc-

Lawrence R. Lyons, of the NOAA Space Environment Laboratory in Boulder, Colo.. has accepted a position in the magnetospheric physics branch of the Space Science Laboratory at NASA's Marshall Space Flight Center in Huntsville, Ala.

tions to fundamental geophysics and for unselfish cooperation in research.
The Walter H. Bucher Medal is awarded to

ourstandage ability. The recipient must be less awards can be made each rear. This rear's re-

### More on Pentagon **Funding Ties**

Emotional Dependence

Forum

Richard Altrock's recent letter on Air Force funding of geophysical research (Ess, March 22, 1983, p. 114) raises a number of questions in my mind and I an sure in the minds of many others. Dr. Alrrock states that funding is determined purely on relevance, availability of funds, and our estimate of the quality of the proposed research' (emphasis mine). Relevant o whom? I assume that the Air Force seeks research relevant to its long-image interests which I regard as contrary to the long-range interests of the human race.

Dr. Altrock argues that 'acceptance of financial support from military sources [does not] make individuals and instirutions dependent clients of the Pentagon. Indeed, the Air Force caurious those it supports 'not to become too dependent upon Air Force funds.' But dependence does not necessarily mean fundicial dependence. The dependence of geophysicists upon the Air Force is more of a moral, or even emotional, dependence. It is difficult to think ill of sameone who is giring you amoney. How bad can the Air Force be if they support my research on

symbolic seismograms?

Those that I shall continue to receive support from nonmilitary sources. One of my great fears is that our society may become so militarized that it will become innossible both to do scientific research and to nomeoperate with the military.

> Steren H. Emerman Dept. of Geological Sciences Gonell University Ithuca, NY 1485

### Proposals as Votes

Mr. Altock is quite correct in pointing ont that research scientists with Air Force contracts are not 'clients' of the Pentagou But he does not deal with a march more important question: does a scientist who solicits funds from a government agency thereby indicate basic approval of this agence's policy? It seems to one that the answer is posture: the more proposals the Pennagon receives, the more it can turn to higher authorities to ask for more tunds for those, and the greater its power hecomes. Yes, each proposal has only a very small effect, but on election day each ballot has an even smaller one. Each of us must take his/her responsibilities: democracy does not srop after election dar.

> 1.-Cl. De Breptaecker Rice University Houston, TX 77251

Afred C. Redfield, 92, died on March 17, 1983. An AGU Life Fellow, he joined AGU's Oceanography section in 1947.

## TRAVEL TO **IUGG GENERAL ASSEMBLY**



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San Carlotte Committee Carlotte Carlott

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# Books

### **New Publications**

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Atmosphere, Weather and Climate, 4th ed., R. G. llarry and R. J. Chorley, Methuen, New Yurk, xxis + 407 pp., 1982. Handbook of Chemical Microscopy, Vol., 1, 4th ed., C. W. Mason, Wiley, New York, xv +

50S pp., 1983, \$69,95. Introduction to Environmental Remote Serving, 2nd ed., E. C. Barrett and L. F. Curtis, Chapman and Hail, New York, xiv + 352

pp., 1982. Les Granites Des Complexes Annulaires, B. Bo-nin, Mannels et Methodes, vul. 4, Bureau de recherches geologiques et minieres, Or-léans, France, 193 pp., 1982. Long-Time Prediction in Dynamics, C. W. Hur-

ton, Jr., L. E. Reichl, and V. G. Szebehely (Eds.), Wiler, New York, xr + 496 pp., 1983, \$85,00.

Mountain Building Processes, K. J. 11s0 (Ed.). Academic, New York, x + 263 pp, 1983. \$72.511.

On the Performance Property in Spherical Spline Interpolation, by W. Freeden, Rep. 341. Department of Georletic Science and Survering, Olnic State University, Columbus, v + 88 pp., 1982.

Proceedings of Coastal Structure 83, 1. Weggel (Fil.), A Specialty Conference on the Design, Construction, Maintenance, and Performance of Coastal Structures, Am. Soc. Civ. Eng., New York, xiii + 10123 pp., 1983, \$76,00.

Random Fields: Analysis and Synthesis, E. Van-marcke, MFT Press, Cambridge, Mass., xiv + 382 pp., 1983, \$45.00.

Theories of Maintion and Polar Motion, 3, 11. Montz, Rep. 342, Department of Georletic Science and Surveying, Ohio State University, Columbus, vii + 116 pp., 1982.

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refipe, statement of research and leaching interests and background in each, ropies of publications and namous rips and the name and addresses of at least these references to: Professor D.R. Nielsen, Chair, Search Committee, Department of Land, Air and Water Resources, 121 Veilroever Hall, University of California, Davis, CA 93616, by July 15, 1985.

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The Present and Future Status of Freshwater Resources of the United States

David A. Francko and Robert G. Wetzel

Fresh water. There is no substitute for it To find it, people have moved to new frontiers. They have taken for themselves water which once supported others. No more. There are no new frontiers. The demand for water exceeds the supply. The fresh water which is available is polluted. So modem man looks to high technology for a solution. But, say Francko and Wetzel, technology will not solve our problems. It will only create new ones. So what to do? Conserve, say the authors, in this courageous and far-sighted analysis of the problem—and the \$20.00/paper \$8.50

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sistant or Associate Professor level, depending on qualifications.

QUALIFICATIONS: a ph.d. in atmospheric srience or a closely related ducipline, with a specialization in the interactions between the atmosphere and the biosphere. Applicants should have leaching and research interests in biometeorology and be able to demonstrate an ability to describe physical/biological sylems with experimental and theoretical techniques. The appointee will be expected to direct research activities to biometeorology towards problems imposent to California.

lents imponant to dometorology towards prob-lents imponant to Callfornia agriculture. Teaching may include both undergraduate and graduate courses in biometeurology, undergraduate courses in general areas of atmospheric science, and advis-ing responsibilities.

s an equal opportunityaffirmative

ENERGISCHE WAR WAR DER GER

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ADDITIONAL REQUIREMENTS IT INCLUDE

\*\*Several reary of research expedicts of massing all neterorology or related area

\*\*Publications record reflecting the quality and productivity of past research

Salary range; R2, \$25,811—5,38,722-cc.i., (TAVI)

\*\*18, \$30,977—5-bit/dt5/year, (LIVF) | 11)

\*\*Mote: the Scientist I and II appointments are remainful to the Scientist I and III appointments are remainful to the dividuals may then be appointed to the of III post flor in accordance with CEAR policy.

Send resume PROMPTLY to Esther Mazon, NGAR, P.U. Box, 3001, Boulder, 1(1), 80,007, or call (303) 494-5151, Ext. 581 or biblion indomination.

Equal Oppoculation Employer. Postdoctoral Position in Physical Oceanography. A positioctoral appointment in physical oceanography will be available heighning September, 1983 in the College of Matine Studies. University of Ideaware, Newark, DE. The initial appointment will be for one year with probable extension for a second year. The salary will be \$291,000 per year, depending on experience. Funds for the rooming

year. The salary will be \$20,000 — \$21,000 per year, depending on experience. Finals for the position will be available largely from a grain by NSF for conduct and analysis of a field observational study of the shelfbreak from in the Middle Adamic Dight. The person obtaining the appointment would be responsible for a partion of the planning and execution of the field study, much of the subsequent data analysis and interpretation, and transling of one graduate level course in physical meaning apply each year. The successful applicant must have received the Ph.D. in physical meaning apply or a closely related held by the starting date of his appointment. Preference will be given to applicants with direct experience in field observations.

To apply send a complete resume and the manner.

Mesoscale Research Section of the Armospheth Analysia and Prediction Division (AAP) Ph.D. Selential for H (Wo Positiones). The National Cepter for Armospheric Research in Boulder, I obtained is tecnifing for Sciential Local Boulder, I obtained by smile consumalistic will be selected and a land decreal laboration with the remot stall. The promotes on phasic will be in advancing the fundamental understanding of important mesoscale processes and then interactions with smaller scales of motion. Both the oretical and observational studies will be encountaged; the main goal is to improve the skill of more scale forecasting.

Calc forecasting.

REQUIRES (LEVEL. 1):

Ph.D. divertation or equivalent research contribution in memorlodgy or related label

Demonstrated expertise interest in small so de or mesuscale meteorology

Demonstrated skill in effective written and and communicated skill in effective written and and communicated.

oral communication

• Strong mathematical funkground

ADDITIONAL SEQUENTMENTS (ELVEL II)

eral encommica

will direct experience in neur observations. To apply send a complete resume and the names of three references in Professor 8.W. Carvine, 15d-lege of Marine Studier, University of Delaware, Newark, DE 19711, Telephone; 302-738-2469.

The University of Delaware is an equal appointmental formation with a product of the professor hr/affirmative action employe

Chairman—Department of Geologicol Sciences, Wright State University. The Department of Geological Sciences, invites applications for the position of chairman, to be appointed September 1981. We seek a dynamic bulividual with administrative takent and an appreciation for research and practice-related educational artivities. Sent, ican the full modes. ed edurational artivities. Bank is at the full professor level and to restrictions have been planed on at easy of specialization. The department is active with 12 faculty and an emphasis on professional practice, vermaintaining a functionnuminum to basic tessorich.

ver maintaining a firm commitment to task 10-scarch.

Send a letter of application, corriculum vitae and names of three references to:

Chairman, Search Committee
Department of Geological Sciences
Wright State University

Dayton, CH 15-135,

Wright State University is an allumative action/comain opportunity employee, Useful State University position is October 31, 1983.

level of in Assistant Professor in Physics in any of the following areas:

1. Astrophysics and Astronomy;
2. Geophysics (Electromagnetic methods);
3. Theoretical Physics [Medium Energy, Particle Physics, Relativity and Cosmology].

The 1982/83 salary range foe an Assistant Professor is \$27,720-\$30,820 per annum.

Applications will be received until May 1, 1983, and the expected appointment date is July 1, 1983. The Department of Physics offers both undergraduate and graduate degrees in Physics and Geophysics. The Department eutrendy consists of 47 Faculty Membera, 36 Research Associates and Post-Doctoral Fellows and 50 Graduate Students.

Candidates Interested in applying should aubmit a curriculum vitte plus the names of three (3) referees to: Assistant Rasearch Oceanographer Position. The Center for Costal Studies. Stripps histhrition of Oceanography, has an injenting for a physical orrangraphet with a general background in mensione processes with compliasts in field and remote sensing investigations of surface gravity wares.

Incumbent will be expected to conduct field and remote sensing experiments of wave properties, dynamics and chinambigy in the neardonry environment. Responsibilities will also include dissign and inplementation of surface gravity wave measurements supporting a variety of other mensione processes investigations.

Minimum qualifications for this position are the Ph.D. degree in meaningraphy and a demonstrated publication record. Successful candidate should have previous field experience as well as demonstrated experience in wave propagation theory, array design and data advances. irriculum vitte plus the names of three (3) referes to:

Dr. A. N. Kamal
Chairmen
Department of Physics
University of Alberta
Edmonton, Alberta, Canada
T6G 21
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have prerious field experience as well as demanstroted expertise in wave purpagation theory, array
design and data adaptive directional spectrum estimation theory. Filgit levels of skill in oral and written communication are necessary.

Appointment in the University of California system is for 1 or 2 years (renewable) and will be at the
Assistant Research 1. II, oe 111 level, salary from
\$22,900.425,200, commensurate with qualitic athers.
Submit resume, indicating an interest in this specific
position together with a uninfurnut of three references, before 4 May 1983, in:

D. L. Inman, Director, Center for Coastal Studies
A-009, Seripps Institution of Oceanography
University of California-San Diegu
La Jolia, CA 92098.

StO/UCSD is an Equal Opportunity/Affirmative Ac-

Research Associate/Space Physics. Applications are invited for a research associate to assist in the analysis and interpretation of data from a network of midiatitude magnetometers with special emphasis on geomagnetic pulsation and aubatorm studies. The position is available September 1981 and is for a period of two years.

Ph. O. and a background in magnetospheric plustes required; experience with time-series analysis on advantage.

Send resume, bibliographi; and the names of three persons from whom recommendations may be obtained to Dr. W.J. Hugles, Astronomy Department, Boston, MA 02218.

Boston University is an affiremative action/equal opponunity employer.

in general areas of almospheric science, and advising rerponsibilities.

APPLICANTS: Applicants should submit curriculum vita, transcripta, statement of research and teaching interests and background in each, copies of publications and maniscripts and the names and addresses of al least three references to: K.H. Shaw. Chair, Search Committee, Department of Land, Air and Woter Resources, 177 Hoagland Hall, University of California, Davis, CA 95016, no later then June 15, 1983.

THE UNIVERSITY OF CALIFORNIA IS AN EQUAL DPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER AND INVITES APPLICATIONS FROM ALL QUALIFIED INDIVIDUALS. Postdoctoral General Assistantsblps.

Postdoctoral General Assistantsblps.

UGLA. The Space Physics Group of UGLA Invites applications for a postdoctoral research position which will become available in October 1983. The position creation of the end of the position of magnetometer data in both earth and planetary or bits. Experience in data analysis and interpretation of undertake independent research and communicate the results of the research are required. Computer programming experience, it highly desirable. Torms of employment and salary to be determined by the directed to C.T. Russell, Institute of Geophysics and Planetary Physics, University of Californis, Los Annied by a resume, a complete bibliography and at least two painers of references who are well acquained with the applicant's background and potential.

UCLA is an equal opportunity/affirmative action. Research Positions for Mathematical
Physiciats. Applications are invited for several research positions at the Ceoter for Studies of Nonlincae Dynamics, La Jolia Institute, beginning summer 1985. Current research involves work on nonlinear wave-wave interactions, acoustic, optical, and eading wave propagation in random media, and fluctuation phenomena in the statistical mechanics of chemical and geophysical systems. Physicists and applied mathematicians who are interested in working on problems of the above type should send resumes and arrange for three letters of recommendation to jolia institute, 895D Villa La Jolia Drive, Suite 2150, La Jolia, Calistonia 92037.
La Jolia, Calistonia 92037.
La Jolia, Calistonia 92037.

Ancerlean Mathematical Society Sicelety for Industrial and Applied Mathematics Large-scale Computations In Flind Mechanica June 27 July 8, 1988

Scripps lashitutions of Oceanography Conversity of California, San Diego La Jella, California The Efficiently AMS-SIAM Summe

The liftcenth AMS-SIAM Summer Semmer to Applied Mathematics of the heal June 27 July 8, 1933, and of the heal June 27 July 8, 1933, and of the heal June 27 July 8, 1933, and of the pince at the Seripps Institution of California. The semitor will be sponsored Jointy by the American Multiconatical Society and the Sounety foe Industrial and Applied Mathematics, with muticipated financial support from federal agencies. The members of the organizing committee are Alexandre J. Chalfornia, Los Angeles, Stunbay J. Daher Childrenia, Los Angeles, Stunbay J. Daher Childrenia (University of California, Los Angeles), and Richard C. I. Somerville, chartman (University of California, San Diego).

The purpose of this seminar is to be a contract of the purpose of this seminar is to be a contract of the purpose of the seminar is to be a contract of the purpose of the seminar is to be a contract of the purpose of the seminar is to be a contract of the purpose of the seminar is to be a contract of the purpose of the seminar is to be a contract of the purpose of the seminar is to be a contract of the purpose of the seminar is to be a contract of the purpose of the seminar is to be a contract of the purpose of the seminar is to be a contract of the purpose of the seminar is to be a contract of the purpose of the seminar is to be a contract of the purpose of the seminar is a be a contract of the purpose of the seminar is a contract of the purpose of the seminar is a contract of the purpose of the seminar is a contract of the purpose of the seminar is a contract of the purpose of the seminar is a contract of the purpose of the seminar is a contract of the purpose of the seminar is a contract of the purpose of the seminar is a contract of the purpose of the seminar is a contract of the purpose of the seminar is a contract of the purpose of the seminar is a contract of the purpose of the seminar is a contract of the purpose of the seminar is a contract of the purpose of the seminar is a contract of the purpose of the seminar is a contra

The preriose of this cominar is to be a silventiate interested in computation that merical inclinations to settle with numerical analysis and mothernaticians working a large-scala computations.

The connected modeling include geophysical problems such as those of the atmosphere, occasin, and interior of the cartle mai planetory, solar, and stellar annual planetory, solar, and stellar annual planetory. Applientions range from idealized turbulence in laboratory convection models to operational washer veetion models to operational wester prediction. Engineering applications is clude aerodynamics, combustion, as finw in portion inedia.

Remain advances or numerical analytic which have applications to these problems will be atmosfed. These indecisions will be atmosfed. These indecisions will be atmosfed algorithms, special unotherlas, boundary treatments, vertically and parallel computing. Application blanks for admiss

Application blanks for admissional from the Mactings Department Amortican Mailleanation Society, P. O. linx 5248. Providence, Rhode Ideal O2040. An applicant should have completed at broad one year of graduate action and will be asked to indicate the or har accountile background and interest A graduate student's application must be incompanied by a letter from the incompanied promise. Those who wish to apply for a grant-in-oid shedd so hadiente on the application form towards, finds available for the sembal amilianted and individuals who can obtain support from other sources shedd there. Questions converning the accenting regram may be independent to Professe thehard C. J. Sommerville, Scripps for all forming the Galifornia, Sun Diege, La Jolia, California 12093.

Research Profition/Spave Physics. The Space Physics and Astronomy (teganinent at Mir Phassity seeks applicants for one or more full-fast is seaked positions within the department Success applicants will play key roles) in the deckpora of theoretical three dimensional models of the Earth's electromagnetic field. Applicants should have knowledge of, and interest in, at least each the hollowing arrays; sofar as indimagnetisphere tractions, magnetosphere coupling, amosphere feel that the season of the field of the profit of the prof

eys experience amby hiterest in minerical mossing is an important consideration.

The unit salary level commenceme with experience, ranging from one-year Research Associately networks the subscriptural years depending on polantament in the Center for Space Physics Research evaluation in the Center for Space Physics Research evaluations and names of three professional absociacy in Comments and names of three professional absociacy in T. W. Hill or R. A. Wolf, Space Physics and Astronomy Department, Rice Pulversity, Houses, I. X. 77251. The University is an equal opportunity/affirmatic action coupleyer.

Temporary Positions Igneous Petrology and Geoglesia University of Muntans. Applications is invited for once salakath at replacement at the sequence for constitution of 1983—84 academic tear. By the lot of contact obligation will be approximately among 3, 1984 or lot lot 8, 1984. A graduate about who will have completed a doctorate before September 1983 or anticlipated completion some during the period of employment would be appropriate for this division.

The Department is backing for someone to go undergraduate figureous petrology and perhaps recented in geoglesias. The average department course in geoglesias.

Charse bont per quarter is two courses.

The position is replacing a faculty member as salidated and therefore is not permanent or ostenure track. To apply send a resume and two ferms of recommendation to: Arnold J. Silvenid, ters of recommendation to: Arnold J. Silvenid, Chairman, Department of Geology, University Montana, Missoula, MT by May 15, 1985.

The University of Montana is on equal opportunity/affirmative artism employer. mrse hant per quanter is two

Graduate Research Assistatou hips. The Department of Geology of Sul Ross State University from pates the availability of graduate research ossistanthips in students interested in the gram. Research areas will include: mineralogy trology and geochemistry of igneous rocks, which will be a support of the property of grant and paleogen trongents on paleogen trongents. Appointments are half-tensive with a maximum stipend of \$5,000 and water out-of-state trillion.

Abulliants abused submit a jetter of applications.

out-of-state tultion.

Applicants about submit a letter of applicants along with a transcript stating research interests along with a transcript two letters of recommendation to: Dennis New Chairman, Geology Department, Sul Ross Sulphyversity, Alpine, TX 79832.

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Caldaras and Hydrotharmal Systems. Hed n. Yellowatone National Park, August 22-27, 1985. Yellowatone National Park, August 22-27, 1985. College credit available. For more information as lact. THE YELLOWSTONE INSTITUTE. 800, 1985. Yellowstone National Park, WY 82190, 1986. 448-0861.

AGU

## Membership Applications Received

Applications for membership have been received from the following individuals. The letter after the name denotes the proposed primary section affiliation; the letter A denotes the Atmospheric Sciences section. which was formerly the Meteorology section.

### Regular Member

Isa Asudeh (S), Buhdan Balko (O), Jeffery F. Billings (H), Joachim Biro (SM), Charles I. Buckley (H), Pins J. Cagienard (S), Charles F. Capen (P), Woncheol C. Cho (H), Arthur G. Crook (H), Andrew G. Fouctain (H), Jacqueline 1. Gordon (A), Kenneth E. Heikes (A), Joseph C. Ingari (S), H. G. James (SM), F. J. Relly (O), Sumant Krishnaswamy (SM), Anthony J. Lawrence (H), Thomas Lyttle (V). David R. Lyzenga (O), Albert Matte (O), Charles Obled (H), Mary T. Osborn (A), D. J. Peterson (S), Rajagopal Raghavan (H), Frank

M. Richter (T), Jacqueline A. Richter (O), Sheldnii Rosell (O), Mark D. Taylor (H), Alhert A. Yigginno (At, Christian C, Weber (T), Eliza I, Wojtaszek (T), Rangsheng Zeng.

### Student Member

Paul B. Aldinger (H), Mickelle Aparisi (T), David W. Hurge (P), Peter T. F. Chia (S), Emeric Fangere (T), Gene Carl Feldman (O), David H. Gancarz (H), Helen M. Hart (Al, Joe Hawkins (SMI, Lisa A. Heizer (S), G. Henderson (V), Mary McKean Howard (O), Shane F. Ingaie, Maureen Kennelly (O). Jongson Kim, Richard H. Kingsley (VI. Craig Kleizing, Leslie Anne Landeleld (V), Joel W. Massimann (H), Kris Charles Matson (O), Ellyn M. Murphy (H), Milan M. Obradovic (H), Ýnshiharu Omura (SM), Michael A. Sinons (O), Kathicen Sullivan (H), Stephen A. Thumpson (H), Elizabeth Titus (H), Thomas W. Trull (Ot. Jonathan Vivanti, Susan Williams (V), Dana Willis (V), Projitha Ndd Yapa (H), Mindy S. Zimmerman (O).

Associate Member

A. Bailey (H), Tannoy King Walsh (O).

# <u>Meetinas</u>

### Program Summary

Satellites & Geosciences, Wed AM History of Geophysics, Wed AM Satellites & Geosciences, Wed PM Test Ban Verification, Thurs AM Test Ban Verification, Thurs PM

A)mospheric Seiences Tropospheric Chemistry, Mon PM El Chichon, Tues AM Dry Deposition, Tues AM Stratospheric Chemistry, Trees PM Ocean/Climate Interactions, Wed PM New Observing Systems, Thurs AM

ransactions, American Geophysical Union The Weekly Newspaper of Geophysics

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American Geophysical Union 2000 Florida Arenue, N.W. Washington, D. C. 20009

Cover. Sails frame Baltimore's Inner Harbor, where new hotels, shops, and promenades and an architecturally sirlkng new national aquarium form one of the nation's most exciting clyscapes. The Baltimore Convention Center, site of the 1983 AGU Spring Meeting, is two blocks from the Inner Harbor. This issue of East is the last to contain Housing and Meeting Registration forms for the 1983 Spring Meeting (Cover design by Patricia Banger).)

Climate Changes, Thurs AM History of Meteorology, Thurs PM

### Earth & Ocean Tides, Tues AM Results on Earth Rotation, Tues PM Gravity Analysis I, Wed AM Crustal Movements I, Thurs AM Crustal Movements II, Thurs PM

Geomagnetism & Paleomognetism Magsat Strulies, Mon AM Long Wavelength Anomalies, Mon PM Paleomagnetism-Sediments, Tues AM Paleomagnetic Results, Tues PM

Hydrology General Surface Water, Mon AM Intl. Urban Hydrology I, Mon PM Urban Runoff L. Tues AM Intl. Urhan Hydrology II, Tues PM General Hydrology, Wed AM Urban Runoff H, Wed AM Lieneral Ground Water, Wed Pai Ground Water & Fractures I, Thirs AM Ground Water & Fractures H. Thurs PM Evapotranspiration, Fri AM

Oeconogrophy
Absolute SST Measurements, Mun AM Texas/Louisiana Shelf, Mon AM SAR & Visible Imagery, Mon PM Gulf of Maine, Mon PM Atlantic Variability, Tues AM STACS, Tues PM Marine Genlogy I, Wed AM Marine Chemistry, Wed PM

Gravity Analysis II, Fri AM

Reversals & Plate Motion, Wed AM

Mariac Geology 11, Wed PM Tides & Waves, Wed PM

HARBOR CITY INN

Greens St. south to Russell St. to (1), Buildingre-Westlington Expressway, BW Airpo and Westlington D.C.

Paleo-oceanography, Thurs AM Estuarine Geochemistry, Thurs AM Physical Oceanography, Thucs PM

Trace Elements, Thurs PM

Planetary Posters, Tues PM

Chemical Fluxes, Fri AM

Ocean Currents, Fri AM

Moon & Mars Meteorites L Mon AM Moon & Mars Meteorites 11, Man PM Planetary Exospheres, Tries AM Surfaces & Geophysics, Tues PM

Seismology Prediction, Man AM Criisi & Raj's, Mon AM Mode & Durface Water, Mon. PM Sources & Stress, Tues AM Ocean Margins, Tues PM Seismulngy & Valcanism, Wed AM Global & Regional Seismicity, Wed PM O & Fluid Interaction, Thurs PM Ocean Surveys & Seismichy, Fri AM

SPR: Aeronomy Exusphere/Ionosphere, Mon AM Airglow/Autora, Mon PM Thermospheric Dynamics 1, Tues AM Thermospheric Dynamics 11, Tues PM lonosphere/Airglow, Tues PM Almospheric Electricity 1, Wed AM Atmospheric Electricity 11, Wed PM

HOTEL

OF MET 9.

HYATT

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HDLIDAY

# **AGU Honors**

Michael W. McElhinny, Geo-

Jacob Rubin, Hydrology

Jamea R. Wallis, Hydrology

Reletionahips

magnatism & Paleomegnellam

John G. Ramaay, Tectonophysics

Frank M. Richter, Tectonophysics

Edward C. Stone, Solar Planetary

Join in the Festivities

Ballroom of the Baltimore Hillon

Hotel at 6:00 P.M. on Wadnesday,

June 1. All meeting participants are

invited and are urged to attend. A Reception will follow the ceremony:

you can meet and congratulate

glass of sherry with them.

those being honored and share a

The President's Dinner in honor

held In the Francis Scott Key

The Honors Ceremony will be

### 1983 Medalists and Awardees

Syun-Iti Akimoto - Bowle Medal John W. Handin - Bucher Medal Fred Noel Spless - Ewing Medal S. Kelth Runcorn - Fleming Medal William L. Chameldes - Macelwane

Donald J. DsPaolo - Macelwane Award Thomas H. Jordan - Macelwane

Waldo E. Smith - Waldo E. Smith

The 1983 Bucher Medal will be presented to John Handin at the Fall Meating.

### 1983 Fellows

Peter L. Bender, Geodesy

Herbert S. Bridge, Solar Planetary Relationships Marx Brook, Atmospheric Sciences Harmon Cralg, Volcanology, Geochemistry & Petrology Lynn W. Gelhar, Hydrology G. V. Gibbs, Volcanology, Geochemistry & Petrology

of the medalists, awardees, and Fellows will begin at 8:00 P.M. It is e mors lavish and formal affair. Tickets for the dinner are \$25 per person. You may order your lickets with your advance registration, Dennis E. Hayes, Oceanography purchase them at the meeting, or Andrew P. Ingersoll, Planetology Hugh H. Kleffer, Planetology call AGU to II free at 800-424-2488 (462-6903 In the D.C. area).

> Radar Studies Ionosphere 1, Thurs AM Radar Studies Jonosphere 11, Thors PM Middle Armosphece 1. Thurs PM Middle Atmosphere 11, Fri AM

SPR: Cosmic Rays Cosmic Rays in Geophysics, Mon AM Cosmic Rars in Geophysics, Mon PM Flares & Cosmic Rays, Tues PM

SPR: Magnetospheric Physics UHAW-6 Results I, Tines AM Charged Particles I, Tues AM Waves & Instabilities, Tucs AN

# Chinese Geophysics

Volume 2, Numbers 1 and 2 Volume 2, 1982, 83 Earthquaka Rassarch in China: 3 Earthquaka Research In China: 4

Francis T. Wu, edilor

Translated articles and salacted abstracts from Acta Gaophysica Sinica and Acta Selamologica Sinica plua contributed papars and a tabla of بحراوركو tomanization (Pin-SW Yin and Wada-Gilas) of Chinasa names. Research focuses on 25 both short and long jarm aarthquaka orediction in China. Covers fault dis-placament, crustal and upper-mentle rasearch, ebnormal animal behavior as 2563 quaka precursars, and more.

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is recalvad.

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refinction coefficients is immediate in principle, althemeting present processing and interpretation. For orientation, we outlied the procedure for the simple case of a separated siegle source and detector pair

0930 Colseis webbode Beisbic ebbae-yaye ososbyatlowo im a psycical model

EXISIC SEAR-WAYE GROSEVATIONS IN A PSYSICAL MOBIL EXPERIENT Schoot D. Techna | Pecty-Esy Gaophysitai, P.O. Bos 55-06, Rouston, TE 77030) ConelA V. Gnolebec, Vulf J. Masseli, and E. Roice Meisnn
The observation and tommon-dapth-point (CDP) protesing of mode-converted shear waves is demonstrated Ent real date colletted in a physical model superiment. The sadel, oebsetged in eater, represented weter dapth sceled to 250 ft, the livet schoot relicator at A000 Pt, and the lest reflector at 7000 Pt, send the lest reflector at 7000 Pt send the lest reflector at 7000 Pt send to 150 ft and 1000 pt; and the lest reflector at 7000 Pt send conversion, inou Pt on 57 sed back to P, is anciclosted for angles of lecidance at the ilquid-solià loterfase [see Eloor) hetwoen 35 to 50 degrees.

Teil & Boundary Layer I, Tues PM Jupiter & Saturn, Tues PM Numerical Simulation I, Tues PM CDAW-6 Results II, Tues PM Aurora & Substorms 1, Tues PM Currents & Fields, Tues PM Tail & Boundary Layer II, Wed AM Frantiers of SPR, Wed PM Numerical Simulation II, Wed PAI Charged Particles II, Thurs AM Waves, Currents, E Fields, Thurs AM Numerical Simulation III, Thurs PM Aurora & Substorms II, Thurs PM Lab & Space Experiments, Frl AM Aurora & Substorms III, Fri AM

SPR: Solar & Interplanetary Physics Solar Scientology, Mon. AM Corona & Solar Wind, Tues AM Sunspots & Solar Data, Tues PM Shocks I, Wed AM Shocks II, Wed PAL MHD Turbulence in Space, Thurs PM

Tectonophysics
Ridges & Convection, Mon PM Subduction, Tues AM Grussal Deformation, Tues AM Mineral Physics, Tues PM

Ocean Crust, Tues PM Cracks & Brittle Behavior of Rock, Wed AM Structural Geology, Wed PM Continental Crust, Thurs AM Paleo-oceanography, Thurs AM Basins & Scismic Reflection, Thurs PM Ductile Rock Deformation, Thuss PM Q & Fluid Interaction, Thurs PM Mantle Heterogeneities, Fri AM

Volcanology, Geochemistry, & Petrology Audean Magnatism I, Mon AM
Ophiolites & Anorthosites, Mon AM Andean Magmatism II, Mon PM Precambrian, Mon PM Oceanic Basalt, Tues AM Isotope Geochemistry I, Tues AM Volcanic Petrology, Tues PM Isotope Geochemistry II, Tues PM Xenoliths, Kimberlites, Wed AM Water in Silicate Melts I. Wed All Water in Silicate Melts 11 (Posters). Wed PM VGP Posters, Wed PM Mantle Heterogeneities I, Thurs AM Experimental Petrology I, Thurs AM Experimental Petrology 11, Thurs PM Mantle Heterogeneities II, Thurs PM Metamorphic Petrology, Fri AM Minetalogy & Crystallography, Fri AM

Ahoy Sall Back Into 1983 AGU SPRING

MEETING There is still time to mall the housing form May 30-June 3

to the Baltimore Convention Bureau, Reservations will be accepted on a space availability basis onto

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Delta - call toll free: 1-800-241-0245 (Georgia residents 1-800-282-8656) Plan a Memorial Day weekend hotiday in Baltimore - there's lots to do?

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HOUSING APPLICATION FORM

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Ahoy! Sall Back Into Baltimore

1983 AQU Spring Meeting

May 30-June 3

HOTEL ACCOMMODATIONS

PARTICIPATING HOTELS CODE ROOM RATES Hyatt Regency 300 Light Street (301) 528-1234 Singter \$58.00 Double: \$68.00 Twin: \$68.00

Extre person: \$15.00 Galtimora Hillon Single: \$51.00 101 W. Feyette Street Double: \$61.00 (301) 7S2-1100

Twin: \$81.00 Extra person: \$10.00 Parlor + 1 \$150.00 to \$190.00 Parlor + 2 \$200.00

Double: \$37.00

to \$250.00 Holidey Inn - Downtown Single: \$39.00 301 W. Lombard Street Double: \$47.00 (301) 685-3500 Twin: \$55.00

Extre pereon: \$10.00 Howard House Hotel Single: \$33.00 8 North Howard Street (301) 539-1680 Double: \$38.00

Twin: \$42.00 Perior + 1 \$52.00 Extra person: \$10.00 Harbor City Inn

(301) 727-3400 Twin: \$37.00 Extra peleon: \$5.00 PARKING : Hyatt/\$6.00" Hilton/\$2.60" Holiday Inn/free Herbor City Inn/free - (location requires car

or bus transportation to Convention Center) \* Subject to change.

701 Russell Street

All hotel reservations must be made on the housing form. Confirmations will be mailed directly to registrants by the individual hotels. After confirmation has been received, changes and cancellations should be made with the hotel

Mail your completed imm directly to: Housing Coordinator AGU Spring Meeting Baltimore Housing Bureau i East Prett Sireel Baltimore, Maryland 21202

PLEASE RETAIN THIS FORM FOR YOUR RECORDS

# American Geophysical Union 🛇 **SPRING 1983 MEETING**

May 30-June 3, 1983

Baltimore, Maryland

Housing Coordinator AGU Spring Meeting Baltimore Housing Bureau t East Pratt Sheet

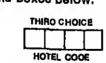
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PART III

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Your receipt will be in your preregistration pecket. The regis-Iretion les will be relunded II written notice of inability to allend Is received in the AGU office by May 26. The program end meeting ebelrects will eppear in the May 3 issue of EOS. which is mailed to all members of AGU in edvance, of the

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### **AGU 1983 SPRING MEETING** MAY 30- JUNE 3, 1983 Baltimore, MD.

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### Aeronomy

FIFTEEN-DAY OBSERVATION OF MEROSPHERIC AND LOWES THEREN-DAY OBSERVATION OF MEROSPHERIC AND LOWES THERMOSPHERIC MOTIONS WITH THE AID OF THE ARECISO ONF RADAR I. Stock (Comphysical iwotitute, Kyoto Unicically, Kyoto 506, Japa), T. Maskawa, E. fahro, K. Fukoyama, S. F. Selber, J. L. Pailose, T. Taude and S. Esto An attempt see made to have a continuous observation of the sonal wind component to the tropical managehete and lower thermosphere for 15 days of August I through 13, 1980, with the sid at the URF rades at Aroutho (18° 5). By ging the wind data, togathet with additional data obtained from esteocological robetts, metant tadar and Titus-E attailite, maiyams were made of the Lims-and come wind profice tides, long-patied waves and short-paried gravity-type saves, respectively. There appeared a transite the egion hatteen 70 and 95 km, with e sharateristis time scale of short 5 days, indicating the peaces of traceiling planetry-solal waves, in the insuling the peaces of traceiling planetry-solal waves, in the sample of a few ten slutture appeare Intermittently is associated with the short-paried ontilation eithe fame and that the short-paried ontilation eithe fame and that the short-paried ontilation eithe fame and the the short-paried ontilation eithe fame and the the short-paried ontilation eithe decided to be the samples tested of the Kelvic-Belsheitz type [nerebility] lower themosphere. Josephere 100580

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Physics of the Solid Earth Volume 18, Number 7

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Bonderenko A. P. Deep magnetotellurie proliting using the verticet component of geomegosite verisitions

Pivovarov B. L. Application of the Welsh filters in geoslectric prospecting

SCIENTIFIC COMMUNICATIONS

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THE PLUX AND SOURCE OF EMERGAPIC PROTON IN MINTER HARMSTOSPHESE.

A.W. Behards (Laburatory for Right Energy Marroghytta, MASA/Goddard Space Yight Contor, Greetshit, B 10711) and P.S. McDonaid

The flux of onetwile pretune in Saturn's Buer synctosphere was observed in two channels from 9-lies of 10-10 MeV. Absorption features due to the finger the satellites Enceledus and Minas ware easily their itable. The flux observed in the absorption size if Minas can be esintained by the decay of a coving elbado neutron live of 2 - 10 cm² a 'rr'. Dit flux is entirely consistent with calculations of the system in the rings of Deturn, the conditrestical provision live of Safe 10 cm² a t f.73 R, requirer reindence time of 10 years. Both the ranidesce time is the amergy spectrum are comparable to those kend in the lumns radiation helt of the Earth. The septe distribution is mearly isocropic is the Haut site of beyond 45 mearly isocropic is the Haut site of beyond 45 mearly isocropic is the Haut site of beyond 45 mearly isocropic is the Haut site of beyond 45 mearly isocropic is the Haut site of beyond 45 mearly isocropic is the Haut site of beyond 45 mearly isocropic is the Haut site of the range 2-1. This distribution is can single of the range 2-1. This distribution is can single of the part of the same of the single sharen. Sature, inner Radiation Batt. Estallits Numerous Absorption).

J. Goophya. Sco., Bluw, Fapur 180466

3795 Gearal
PARADICK TRANSITION IN COSMIC PLASMA PHYSICS
L. Alfvam (Slactrical Engineering & Cosputy Eclanost
Dapartment, University of Californity, Sta Disge, la
Jolla, CA 93093
During the 1970's in situ measurements in the
magnetospheres, including the suler wind region
("solar magnetosphere") drastically charged or minstanding of the properties of rossit plasses.
Purther, to have learned how to generally troubt
from plasses investigations in one region to other
regione. This mone that laboratory towardstelost
plasses of the size of, may, 10 cm can be used to
echieve botter understanding of counterpireast ef
magnetospheric dimentions; asy, 1012 cm. By acides
efag of 102 to the transfer laboratory and agentospheric resulis to galactic plasses of, say, 1012
the. A third jump of 103 brings us up to 105 fished
distance 1025 cm and honce to constrogical problems.
Gooyhye, Run, Lett., Taper 1103-22

Gooyhym, Run, Lett., Paper JL0422

everyben, Res, Letter Part Hafit

In Huntevilla, Mentevilla, Alabama 1989), G. E. Pervis

Plauma data from the UCBO Auroral Particlet Experiments on Applied Fochnology Satellites 3 and 4 est used to investigate the dynamics of netwal sharing swrate. Both actipps and daylight charging swrate from spacific swrate. The different physical processes are found to be involved in the thirping process. One of these is straightforward the space of the onvironment, typically changing by baddraf of the onvironment, typically changing by baddraf volts in a law seconds. The other protest it more subties differential charging end potrevial berriff formation preceds accruerved charging and datarabed in the potential to change by saveral handrafe of volts. The letter process is found to be preferently responsible for deploy responsible for deploying the prefer of both spaces. J. Goophys. Res., Slue, Paper 3A0578

time General (Planatary Rings)
tomists rosers on THE BURY 10 Jupiyes's Ring
d. J. Coerlangeo (Department of Earth and Planetary
Scherr, Kassenbusstie institute of Technology,
Cashidge, Ma 07130)
A mastrial tengaration program was developed to
follow the paths of dust precises to rhe levian ring,
isoloding the occaineration due to gravity, and the
Lorent and dung arcalerations arising from the motions
of the chatged dust through the Jovian placema.
Furtiles twee assumed to start from circular,
constalled Emplaries notion. The orbit of a 2.3
alarmy radium, spherical dust particle of density f
plus chatged to -100 will become significantly
perached. The ting will tend to vary northwards near
103-187 longitude jubrar the longitudinal component of
the Javier magnetic flaid is strongently the sexieum
scourios of wheme Jupiter ring graims to about 0.1
degrees, construct with a distance of 220 km above the
spatterial plane. This distrace is oner then an order
of magnitude larger then the cheaved upper limit to
the bail-thickness of the ring. Either the particles
tre larger, or the voltages on them lees, then what has
beta laisered by previous workers. The planess mear the
singitude af 0.3 alcrons with -10V potentials, exarting
at history by considerathy cooler then was estimated.
Exticles of 0.3 alcrons with -10V potentials, exarting
at history is clearly or other magnetic plane.
Their parks do not follow Kapieriem orbits, and
particle positions are not symmetric shout the
symmetry list of the rorbits than the 0.3
sirges particles, while particles of 0.2 microne or
less as perturbed than the Jupitar cloudrops within a
fer teas of hours. (Riogs, Jupiter magnetosphere,
dett).
J. Geobles, Res., Elue, Papor 140187

J. Geophia. Res., Elue, Paper 340t87

6940 Phaseson related to sarthquaha prediction Facist MEASUREMENT OF STISHIC TRAVELYIMES -EVESTICALISE OF VARIATION PROM FIDAL STEESS IN SMALLOW COURT

PRECISE RESULTERED TO SITEMIC TRAVELTIMES IN ERILIVE CRIST INSTITULIES OF VARIATION PROMITION ATTEMES IN ERILIVE CRIST.

2. P. Lio 10.2. Geological Burvey, Renia Park, California, 94023). Z. Z. Westerlund and J. Z. Fletchar

We have conducted 8 procine selectic serveps moor Moliture, CA, over a varied of 1 y lo an attempt to detect the trivelrian variotion convend by the solidate the trivelrian variotion convends to the provided a repeatable solidate in any first variotion component goopbanes 660 mappies/s by two carette recorders modified loc procine synchronization of date enspire, ognicat enter the convents of part vary disfituad at a nominal rate of 600 mappies/s by two carette recorders modified loc procine synchronization of date enspire, ognicate enter color. Each survey concluste of 180 travelities manuscente over the 12 h parlod between 19.2. and 5 a.s. local times the time irrate of each appearance was limited by daythm cultivel noises. Individe explicate extracted from the digital date by a coliragina tocappolation. Fractional error of the resultant constructed from the digital date by a coliragina tocappolation. Fractional error of the resultant constructed from the digital date by a coliragina tocappolation. Fraction of attrive the divertion of wave. The first curve, conducted at a spring ride in angest. 1981, choosed a variation of Autrol 2 and also correlated in the with the extensional rideal rulin component eleng the hosellus divention. The mark two acresys, conducted at two component field record to the first of the same tidal atvant component. Greeke and into the 1982 dry coston, the other 5 rurewy conducted a greet the converted of the twelthes in the whole or relation only artistion of trivelties in the whole or or the first constitute of the contract of the partists of trivelties in the whole or o

Seismology

Sign Setraments and techniques

THAMEIRIC DERECTION 10 THE ALRUTIAN ISLAND AND

P.S. Rebermann (Corparrive leatitote for fasearch in

Relifermental Sciences. For 449, University of

Colorado, Boulder, CO 80199)

Lecenty It has become appeared that releasiests

atterion has decreased substantially in anny regions

closve of the VELA arrays to the University of the Section decrease has been deviced in the University of the release of these states the Caribbase, Tongo, and the Bow Sebrides. In this paper the officit of the ricasure of three strays on the wearing of avonic in the Alaurico is this paper the officit of the ricasure of three strays on the wearing of avonic in the Alaurico is read to the first the separate of the relation of the Alaurico is and east anchike Toland during the early stark on and east anchike Toland during the early stray on and east anchike Toland during the early stray on and east anchike Toland during the early stray on and east anchike Toland during the early stray on and east anchike Toland during the early stray on and east anchike Toland during the early stray on and east anchike Toland during the early stray in the inspect of the FELA errays there will be absorbed anchoration of the Anchike were supported by the instribution decreases for the central Aleurica and 1970, the time of the entwork was closed to eastly fetted by the instribution of the Anchike neuron.

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the changes which day be procursors to carthqueton, then approved a detection related changes and pagni-tude suited which would those changes are essential for ecanically results. (Colection, Cleutians). 1. to plays, Red., Ech. Caper 186279

Social Sciences

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PMINGE, University of Colorado, Boalder, EO 803091,
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E. Sien, H. Kart, A.L. Lane, C.W. Mard, E.E. Siamons,
I.S. Esposito, O.L. Coffeen and R.D. Pomphray
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Solar Physics, Astrophysics, and Astronomy

Water Resour. Rom., Paper 3W0119

7130 Slectromagnetic radiation
Soler Veriebility in the Spectral Range
3110-8570 \$\(\) L. A. Hall (Air Force Geophpairs Leboratory,
Sedford, Kasaarhusatta, 01131)

Instream April 1917 and April 1941, Lour balloon
Highle of a solar ultravioler spectrometer wars
analysis of these measurements show that the
solar irradiance in the wavelength range
2330-2270 \$\(\) has been content within \$\frac{1}{2}\$ it over
this period. The central emission cores of the
Hg Il resonance lines increased in intensity by
about 288 over the same time period. (folar ultraviolat irradiance, stratosphare)
J. Caophys. Roo., Orean, Paper 2001/J

### Tectonophysics

Bild Heat flow (Extensional Sector)

EVOLUTION OF THE PARMONIAN SASIN STRICT

2. SUSSIDENCE AND THERMAL KINTORY
Leigh Royden 1 Duperleant of Earth and Planetary
Relegionae, Researchweatta Notifute of Technology.
Cambridge, Massochweatta C2119 and Department of
Coological Sciences, Extend toterativ, Cambridge.
Researchweatta C2118), F. Horvath Geophysical
Conparisant, Edivor University. Kun Sels ter 1, R-1081
Endapost, Hungaryl, A. Nagymarony (Goological
Dupertment, Edivor University, Massoch Ret 40, G-1088
Budapost, Hungary), and L. Stegens (Extengraphy
Department, Edivor University, Kun Reis ter 3, R-1081
Budapost, Hungary), and L. Stegens (Extengraphy
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Department, Edivor University, Kun Reis ter 3, R-1081
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Budapost, Hungary, A. Stegens (Extended to the Index
Budapost during astecation. Cruersi extension beneath
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most peris of the basin is extension to see the Vession
State of thin-skined extensions; textension beneath
we woult of thin-skined extensions; textension beneath
workern Flanns benin suggesta that little or se hauting
occurred during basin auxension. These data see
consistent with a thin-skined sector of sector of

8138 Featomophysiss (Piete teriodics) DEVELOPMENT OF FERENCE OF INTERSCRAPSC PREDUCTION NOVELLOWERS OF PERSONS AND ASSESSED TO SELECTION OF THE PERSONS OF on IPCO leg d8 both lack the thich relative squares, compies deformation, not shought widence of serveries which thereteries nore widely knows forceares their barder continues. Both regions emotion significant in attenual siloss of pelegir and healpsingly sediments in place of thirt treats and tranch slope heals sequence composed of terrigeneon turbidites. The Elcoye Paniannis of Coste Bies roatelon on significant melange terremes, beforestion of the safic ignore basesant and its thic cover of pelegic, healpsingle, ond first-cycle votamoganic caterial is edid eserall, with disorate souss of naterial is edid eserall, with disorate souss of lateness deforation dirrupting otherwise well-preserved erratigraphic sections, lotronceasing enduction course lething longitudiest transh feed are subduction sous proresses devived the section of sediments, and reasenty subjected experimental and theoretical andels of subduction sous proresses devolving flow salenges are improperlated for intraoceasic foreacts. Intraoceasic foreacts generally took bight-grade solid components from as binestablet and eslogic flow salenges are improperlated binesses the devolving flow salenges are improperlated subjects and eslogic actionically lossoporated at blocks to lessaryread section, although spliff and services of the fetrer because tray provide detritus of amphibolite and ultranfie rork to the twenth sol traush slope.

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brittle lithosphert. In the case of the Djabouti ridge recurrence time of 10-20 years are found for corthqua-tes of about 2 - 6. Gaophys. Ess. Lett., Paper 110146

Silo Piata Terionics (Etremeional Rasins)

EVOLUTION OF THE PREMONIAN RASIN SYSTEM

1. TETTORICS

Loigh Royden (Saparsment of Earth and Planetary
Sciences, Meassachusetts Institute of Tochnology,
Cambridge, Meassachusetts R2119 and Department of
Geological Octumens, Harvard University, Suiappear,
Meassachusetta 82139, Farant Beryach (Expariment of
Geophysics, Lorand Edvice University, Bulappear,
Hungary), and Ainos Empire (Caophysics) Exploration
Company, National Oil and Gas Trust, Bulappear, Hungary)
The Carpathian are formed during Correctanus to Miscens

Lime by continental rollfatus between Europe and smallar
continental freguents following southward and Westward
sobjuttion of organ floor. Dering the Lost atages of
thrusting in the outer Carpathian southward and vestward
solution of organ floor. Dering the Lost atages of
thrusting in the outer Carpathian continuous and are
commented to each other and for areas of convail
shortening in the outer Carpathian thrust bair by a
conjugate System of strike-slip facits. Palimapsatic
reconstruction of the basins indicates about 100 (170)
has of east-west extension across the intra-Carpathian
region during this time. We interpret the Weams basin,
which is superimposed partig on the ligach nappes of the
outer West Carparhians, as the result of thic-slimoud
extensional tectonics above a shallow detechant sarface
within the trust. Extension of upper crusts rocks
above this datachusin rea probably accordated by
thrusting of the outerwest uppear of the West
Carpathian ever the European platfore. Extension of
busine farther lossis the Carpathian loop probably
involved rocks or deaper revents lavius and vithor the
upper manife. The most internally situated basins
iornal by extensional proussess that involved the entire
ilthosphare. Thus the depth to which extension occurred
sease to be alongly related to the proximity of each
beain to the acrive internal plantane and internal period of the trust of the carpathian and
iornal by extension and the trust of the carpathian occur

\$150 Plate recionics
The briving Hickanish of Plate Tritonics: Belation to Act of the Littophese at Thrombs.
P. L. Carlson (Complesses Department, Toron Adv. Colversity, College Station, 18-08, 778-31, 1, 5, 5. 

where ', and are instance related to drag, with pull and ridge push, respectively. The relation between volcits and age is  $S_{ij}^{i} = S^{ij} S_{ij}^{ij} r^{ij} + h^{ij}$ 

We have fested this model by linear regression using

The strongth of this correlation ( $a^2 = c$ , of is strong ovidence in lever of the welldity of this simple model. These results suggest that ridge push is just sufficient to evercome drag at the base of the plate, and does not contribute significantly to the motions of occamic plates, ibough the value of  $\delta^2$  is consistent with the motions of plates not attached to subducted slabs.

emphys. Res. Lett., Paper JL0250

5175 Structure of the lithusphere TECYCEIC STEESSESIN 755 LITEOSPEERE L. Pieticul (Laboratoire de Odophyaique, Univer-sité Yerle-Bud, 91405 DEBEY, Prenosi, C.

sité Yaris-Bud, 91405 0 888 Y, Prenesi. C. Proidevaus Yarious lipea of observables lestibushe focal mechanisme, le attu measuvemente and gadingical deforeations give information adout the large coste here espained by postutating appropriate force coling et the edges and beneath the plates. This approach igoeres the rote of assembningementies within the Uthompheve. Here we ensigne the effect of hoth houndary and inlevel forces on the stress pattern and show that both contributions are of comparable engintude. The presence of infernal sources makes the problem three-discussioni. We show however that it can be reduced to a Z-dimensional place alress formulation, whereby the edge forces are expressed by the mon hydrostatic stresses—and the head absert is learnessed by the seal absert in the greatest paths of the seal absert is learnessed by the sealnessed by the sealn

geophysical shearwables yields an upper Gound of a tev bers on the nagniude of the Gestl drag. For the continents we infer the existence of an underlying upper ments somewhat denser than under counts.

8170 Structure of the išrbaaphers
fullpand. Parametras of the Oceanic išthosphere estimated
send Geoideis Spatiala, Cantra National d'Scuden Spatialas,
iŝ, Avenas Edouard Belin, 31055 Toulousa Cádan - Franca,
iŝ, Avenas Edouard Belin, 31055 Toulousa Cádan - Franca,
iŝ, Avenas Edouard Belin, 31055 Toulousa Cádan - Franca,
canid heightanomailas decived iron EFASAV mithoter
dara have been analysed avenas fractura momea and over
ocean ridges in two libiled cegions of the South
Pacific (Situaln Franture mos system i East Fracific
Elea) and Boutheast Indian Ocean. Observed geoid beight
- age and geoid hight decivative (with raspect so age)age relationships have bere established. Comparison with
theorarical telationships computed for the plata model
of lithospherir rooling parmits an astimation of tha
thermal parameters entesing in the model. Two quantistas
oan be decived i the product or tm (r., thermal
diffusivity ; o, aniume aneffician of thermal
expansion; fg., button bendays temparature) and the
rhishoses E of the piets. The best litting values for
the South Pacific and the foutheast indien Onem are i
ox fg. 0.32 a 10<sup>-3</sup> cm<sup>2</sup>a<sup>-3</sup> and X in the range 50-10 km
for ages less than 30 my whatres for larger ages
() 30 my?, geoid observations are better arplained by
a larger E value, in the range 70-90 km. The depth-age
reinticuship observed in the South Pacific region is
considered with these parameters. On the other hand,
date for the Northeast Pacific argus tather ion a
lithospheric thichmass larger than 100 km. This suggests
that local and ragiousl variations satat in the thermal
properties of the oceanir lithospherm.
J. Geophys, Pes., Ped, Paper 281780

STRUCTURAL EMALYRIS END INTERPRETETION OF THE SURFACE LEFOREATIONS OF THE BL ASMAM EASTHQUAKE OF OCTOBER CO. N. Philip Laboratoirs de Thoiogis Structurals, Université des Sciences et Techniques du languedo. 14060 Montpeiller obder, france). M. Esghraoul The Fi tenen estriquohe of October 10, 1880, represents the major seispotectomic event of these iest decades in the West Mediferrenean area. It has induced a large arount of surface breaks. This earthquake reveals the Peporismes of corpressional phenomena that theracteries nowadays the tectonics of Borth Efrica. The tectonic analysis of surface rupiurs shows the complexity of the deformation meannism. The principal nechanism consists of the ectivation of a Inf-St transfer purpose the surface accompanied with a left-leteral rotion and with an infense deformation of the northwestern overintualing block. An accurate description of these deformations shows that, for a large part, the breaks generary depends closely on the substratum structure. Finally, the smallysis of the dislocations on irrigation ducts just above the fault troces allowed a quantitative study of the dedormation. (FI Asham earthquaks, Worth Efrica, Surface ruptutes, Seismotectoricic. Philip |Laboratoire de Ghoiogia Structurale, Univer-Tectonics. Paper 310217

### Volcanology

Bodd Volcan-close topics

Dot. Valification extination to the district of the large of the state of the district of the state of the st relation to the least Vallew/Mono Basin waternic conduct to terresect by var. of a Project of Continuation for all though a great dual of continuations in presently underway, buth yet needs to be Jone. Only research rectnique which has not been exploited is actentific drilling to interrediate dapths (2 - 1 km). A carefully structured research program in which scientific drilling to closely integrated with surface geological and seophysical litels studies would help clarify any of the present issues concerning this volcanic corpies. Sav. Gaophys. Space Phys., Paper 1E0259

Sogo Volcanology

daisaic ACTIVITY STLAYED TO THE MARCH-APRIC, 1982
ERPPTIONS OF EL CHICHON VOLCANO, CRITPAS, MEXICO
J. Bewahov [Institute de ingenieria, U.N.A.M., C.U.,
Maico Othis, G.P.), S. De la Cruz-(evan, S.K. Sfngh,
f. Mediom, and C. Catifires
Interesting seignic settivity occurred before, during,
and fallowing the recent sruptions of al Chichon
Volcano in southeastern Eaxloo. Sewerat sexptions took
place in lote Earch and serily April 1982, sjecting
large scounts of sedemitir seh and punice. The first
stuption was preceded by one conth of inscusse sheallow
seignicity (hel kol. Two days before the first
eruption of March 29, the seismistir changed character
and was most likely shellow (hel kol.). This shallow
seismicity one observed (hels kol.). The different
sature of shallow events and deep events suggest that
the iorner ere divectly related with the magna
sovements and ground water interactions while the
latter are probably controlled by regional secrents
sitesess, erring on the weskead region left by the
eruption of those depthe, fell Chichon, prediction of
voltanic aroutions seignicity and eroption].

Physics of the Solid Earth Volume 18, Number 9

Sadovsky M. A., Dmahchikov V. A., Knudratyev V. N., Roninshov A. N., Chuhs-

SCIENTIFIC COMMUNICATIONS

Ismall-Zade T. A., Luhimove E. A., Mukhtarov A. Sh., Sultanove Z. Z., Firnov F. V.
Tompsreture varietions datermined from monitoring hydrogeological wells
in ssismically active areas
Kurbeney M. K., Kuz'min Yu. O. The streinmeter offset astimeted from tillmoter data Proskuryakova T. A., Novikove T. P. Somo evidence for the oruntal structure of the Western Cencasus
Smolenovn B. M. Spanirsl cheracteristics of hond weves from n half-space end
interfering head waves from e leyer
Zasinvsky Yu. bl. Intensity of infrasound amitted into the etmosphere during vihrosaismic sounding of the Eerth

Nikonov A. A. The Greet Caucasus strong certhquake of Jenuery 14, 1668.

Berisov B. A. The Eastern Cencasus strong cartiquekes; historical avidence and genlogic sniting Nikonov A. A. On the 1868 Eastern Caucasus enrihquake: a reply to B. A. Bori-

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## Hydrology

JiJS Misciology
THM ROSPONS OF NATAPOTTE ICERRAD TO OCEAN WAVES
Peter Wishirs, Ardica Fristmenn iScutt Polity Research
Southers, University of Carbyldys, Cambridge Caf EER,
England; and clav Orboin Massk Polarimetistit, PO Box
Ind. 1310 Calc Loftharm, Morsay!

The heave, tir and strain vesponess of these
Antercit rabular tebergs to count weak were measured
Ouring a 1980-1 cruise of HMS "Endurance" to the South
Atlantic. The three tembergs, located mass the South
Sandwith and South Orkney Salands, were traintenanted
with accolocometers, rilinature and with straintenanted
with accolocometers, rilinature and with straintenanted
with accolocometers, rilinature and with straintenanted
by a holicopter-borne madde che soundor. The heaven
response fool. The thickness of the temberge was surveyed
by a holicopter-borne madde che soundor. The heaven
response occurred mainly at the swell partial, but with
thospredictions of a numerical finite element modet.
The totil response occurred mainly at a long resonant
specied 15-20 at which again agreed rail with the model,
but there was also a significant response at coose were
periods 15-20 at which again agreed rail with the model,
but there was also a significant response at coose were
periods 15-20 at which seaseded predictions. The
strain response had a component at very long periods
which is unexplained by theory, while the surface
strain at posen wave periods agreed with the slople
ansitylical model of Occame of 11980. Using this
order it is presible to predict a wave height mal
period that will case breakep in Ithely to occur
during anjor storms in the open Scuthern Casen,
iterborge, Cean wavea, Southern Ocean, Elouting bodless.
J. Goophys, Per., Creen, Faper 160070

J. Geophys, Per., Green, Paper 100570

SCIENTIFIC COMMUNICATIONS

11/0 Foow and ice

\$CME: METEOPOLOGICAL APPLICATIONS OF RADIDACTIVE PALLOUT

REASTPREEDIE IN ANTEGETIC SHORY

1. POWERCH limboratoire ds Clasiciogie et Céophysique
de i Environmentent-CARS. 2. rus Frés-Cloires,

38011 Granoble-Cades). P. Pingiot and G. torius

& Addosarius felicut, generally performed to deteroine

tvarage anow accummisation raises, ran elso be used to

determine other meteorological information. The following

ravirus were obtained incom measurements on the Anterctic

ict sheet:

\$\$0. attentionbride consideration on the Anterctic

\$\$1.0 attentionbride consideration. ict sheet :

a) a steatospharic semidence line of \$.5 pears for ridioleotoper such as 90% and 117 Ce.
b) a write of typroximateing | for the recio \$ between the tencentration measured in the sir (gfs.c.,) sof the concentration measured in the sir (gfs.c.,) sof the concentration determined in the smow (gfg), elib metred to the dry leith server the dry leither typesemis between 15 and 18 goi the dry leither typesemis between 15 and 18 goi the total deposition in the constair regions sed as such as 10 to 60 \$ in the central mosas,
d) typescipitation increase of 38 \$ occuved after 1955 than compared with the decade 1955-1845.

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### Meteorology

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ari Respective, Result University, Weshington, P. C.
Figure 1.

Ard Temperature, Annual Unaversity, bashington, P. C. [1]

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### Particles and Fields-Ionosphere

Sill Auroras

THE EXTREME UNIMATIOLET SPECTRUM BP DATAIDE AND RICHTBIOE AUTORAE: B00-1400 Å

P. Parasca, S. Chakrabarti, S. Bowyer sed B. Simble
(Space Sciences Laboratory, University of California,
Barbalap, California 94120).

Intellife observations of the suroral emission spectrum between 800 and 1400 Å at 8 Å resolution are presented. The spectrum is dominated by itself-emplied band makesian. A number of bright lines, mast cotahip the
olif, 31c, and the Ol, 489 and 1106 Å features, are
detected as all smith angles septed by the sputtroorter (30-150°). The day suroral spectrum is dominated
by acquir covyges and nitrongen insemisations. The H I,
1116 Å Lyman siphs line is a prominent feature of many
of the might and Sap suroral events.

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A FIRST COMPARISON OF STARE AND EISCAY ELECTRON DRIFT
YELOCITY PERSURCERNIS
E. Haisen (Max-Plenck-Institut id Auronomie, 3411
Latiandurg-Indau, FRG), K. Schiegei
Interest and the second controlled capability of providing obtained on the incorpheric electron drift resolution, which are useful for tuido reage of geophysical cludiat. The excuracy of such assimiles but for the invalidation which are useful for tuido reage of geophysical cludiat. The excuracy of such assimiles but for the invalidation which are useful for tuido reage of geophysical cludiate. The excuracy of such assimiles but for the invalidation which similated the first line been faciled by comparison with similation titler facility [Estati. The suggested of the assimilation with similation of the assimilation and the cludiation of the estimated vector true in agreement with the citical resourcements, for ril drift magnitudes. The descuracy of the two aireas interesting the pass valorities tro even lower than those predicted by the less it interest the first and incomplished with the citical actities. The data are not incomplished with an assumption that the possible phase valorities in the plane are invited operard by the lonespheric description of the ionospheric inproved in the possible phase valorities in the plane are invited operard by the lonespheric interesting function of the ionospheric inproved and modelling with the kinalic lineory august that a backettlar region, extended in still dee and alioning several values of the ion influence observations, leads to an improved theprefical it is often measurements.

Plane convection, extended in stillade and alioning toward values of the influence observations, leads to an improved theprefical it is often measurements.

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Ocones transport is calculated for steady,
diselpative pleastary waves welmy the Schorles,
Lagrangian—cean, and residual circulation. A
Sagrangian—sadel of parcel dynamics is used to
fasterpert pleastary vare-photochemistry interaction—fo
changes are found to be significant only where there
are large gradients in chemical source and sinks
along parcel trajectories. The largest changes in the
sean field are found in the lower stratosphere and are
due to the Lagrangiao—men advertion. When the
Lagrangian—cean advection is approximated by the
residual cfrequision, ecrose in the transport
valotities as large as 30% any Occur.
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TURBULENCE ARALFAIR OF TRE JOVIAR UPSTREAM VAYS PRESCRIBONS
C. V. Smith (spece Science Cancer, ReHeritt Bell, University of New Rampshire, Durham, NR 03824), M. L. Coidetelo and W. S. Matchesue is Voyager 2 approached Jupiter's bow shoch, large amplicude fluctuations were seen in both the amgantic Flaid and playes fluid velocity. These libothetisms gamurally coincided with the occurrence of long-lived energetic particle events similar to the apetream waves often observed news the userb's bow shork, in this paper we present as analysis of the amgentic field end plasma observed news the userb's bow shork. In this paper we present as analysis of the magnetic field end plasma observed operate least and plasma observed for interes velocated to the upstream awars as generally seen ands rose will interta. The enserved correlation langths of chase Pluciacions suggest that they are coherent over only a few wavelengths. Our smalysis is consistent with the hypothesis that these Pluciustions are driven by streaming lose, possibly protons. No saidsone for the onlatone of whistier waves is found. We struct that some of the observed apaniral festows engaget that dynamical introduces of majorial festows engaget that dynamical introduces of majorial theilicity to large apatial scales. (Upstream waves, MED turbuleses).

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DESERTATIONS OF CHARGING OTHANICS
B. C. Disco (Physica Department, University of Aldus
In Buntaville, Buntaville, Alobaza 15099), C. E.
Parella

observed apaptral featows suggest that some of the bulant processes are occurring in the uparters were region, including a possible observations of an inverse (Opsirean uswas, MED turbuleses).

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